ARIZONA: ANNUAL EMISSION INVENTORY REPORTING WORKSHOP

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Overview

- Introduction

- Who Must Report, What Must Be Reported And What Does ADEQ Do With Emission Inventories (EI)?

- **Major Point Source** Reporting Through SLEIS

- **Minor Point Source** Reporting

- Q&A

Annual Updates & News

- Your 2013 Emission Inventory Report Is Due
  June 1st, 2014

- SLEIS Will Be The Preferred Reporting Form For Non-General Point Sources

- Additional SLEIS Training Will Be Held In The Future

Our Vision & Mission

Our **Vision**:

To lead Arizona and the Nation in protecting the environment and improving the quality of life for the people of our state.
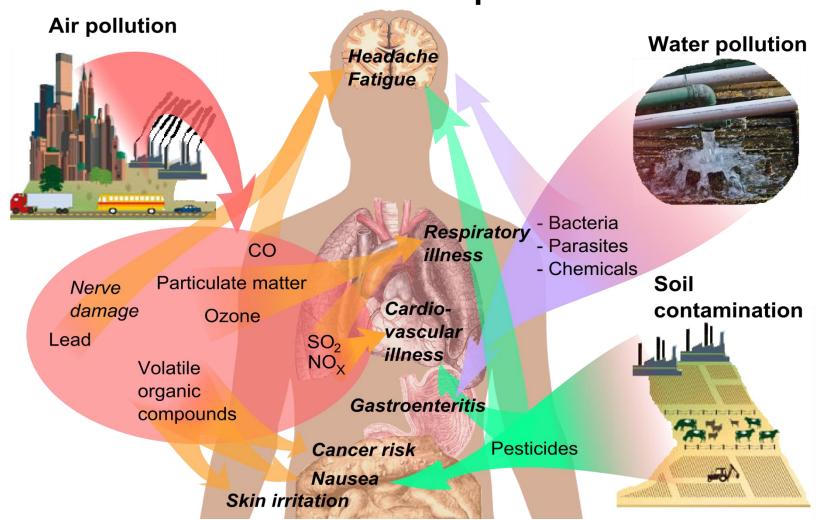

Our **Mission**:

To protect and enhance public health and the environment in Arizona.

Air Quality Impacts: Public Health

Health effects of pollution

Air Quality Impacts: Infrastructure, Property and Historical Monuments

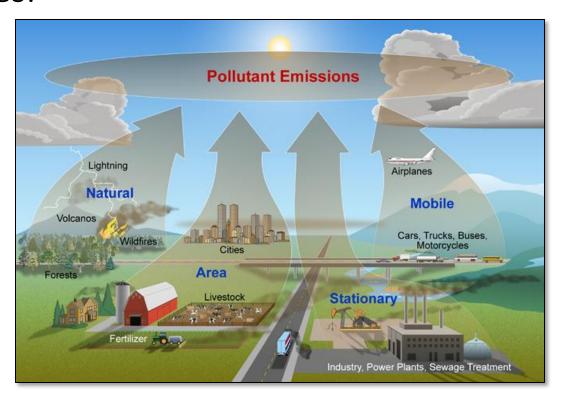# Air Quality Impacts: Natural Vistas and Common Resources

Air Pollution Can Diminish the Quality of Common Goods and Natural Resources.

What is an Emission Inventory (EI)?

□ An emission inventory is a summary or forecast of the emissions produced by a source or group of sources.

What is an Emission Inventory (EI)?

- Your 2013 emission inventory should contain the total amount of air pollution that you *actually* emitted in 2013.
  - Generally reported as TONS per YEAR

Who Must Report Emissions?

- R18-2-327. Annual Emissions Inventory Questionnaire

(A) Every source subject to permit requirements under this Chapter shall complete and submit to the Director an annual emissions inventory questionnaire.

For definitions of a source type for the purposes of determining permit types and reporting guidelines/forms, see AAC R18-2-326 & R18-2-511

Source Classifications

Major Point Source
- Has the Potential to Emit or Emits Aggregate TPY of 10HAP|25HAPS|100CAP|250CAPS
- Full Definition @ A.A.C. R18-2-401
- Must use SLEIS to report 2013 emissions

Synthetic Minor Point Source
- Permit Restrictions on Production, Operation or Emissions
- Emissions "Artificially" Below Point Source Threshold
- Can use either SLEIS or paper forms to report 2013 emissions

Minor Point Source
- Non-Major Source Subject to Regulation by Director under ARS 49-402 (B)
- E.g. Dry Cleaner
- Can use either SLEIS or paper forms to report 2013 emissions
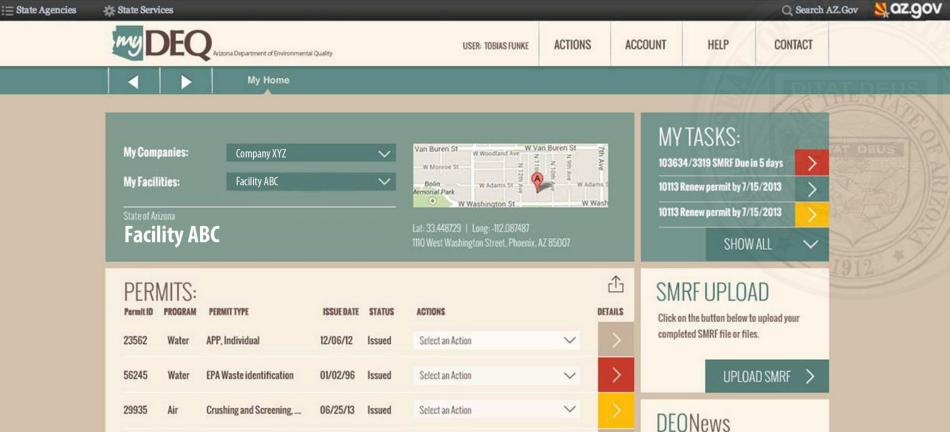
Portable Source
- Can Operate in Multiple Places
- E.g. Rock Crusher & Screener
- Can use either SLEIS or paper forms to report 2013 emissions

How Do I Prepare and Submit an Emission Inventory?

- Major Point Sources Are Required To Use SLEIS

- ADEQ Reports Major Source EIs From SLEIS To The EPA

- SLEIS Is ADEQs Preferred Reporting Form For Non-General Permitted Sources

- General Permit Holders Should Use Excel/PDF Forms Located On ADEQ Website

"The completion of this project, with its cost savings, convenience, and compliance assistance, will be a boon to business regulated by ADEQ and help attract new business to Arizona."

– *Governor Jan Brewer,*
Building on the Four Corners of Reform, January 2013

What Data Do I Need To Report?

- The annual questionnaire should include the following information (R18-2-327(b)):
  - The source's name, description, mailing address, contact person (w/ phone number), and physical address and location (if different than mailing address).
  - Process information for the source, including design capacity, operations schedule, and emissions control devices, their descriptions and efficiencies.
  - The actual quantity of emissions from permitted emission points and fugitive emissions as provided in the permit of the following regulated air pollutants:
    - Any single regulated air pollutant in a quantity greater than 1 ton or the amount listed for the pollutant in the definition of "significant" in R18-2-101(130)(a), whichever is less.
    - Any combination of regulated air pollutants in a quantity greater than 2 1/2 tons.

What Data Do I Need To Report?

- At a minimum, you must report emissions as specified in your permit
- These are the pollutants ADEQ needs to report to EPA:
  - Sulfur dioxide (SO_2)
  - Volatile organic compounds (VOC)
    - This total should include all HAPs which are also VOCs
  - Nitrogen oxides (NO_X)
  - Carbon monoxide (CO)
  - Lead and lead compounds
  - Primary $PM_{2.5}$ (PM25-PRI). As applicable, also report filterable and condensable components
  - Primary PM_{10} (PM10-PRI). As applicable, also report filterable and condensable components
  - Ammonia (NH_3)
- We strongly encourage you to report individual HAP emissions.

What is an Emission Factor (EF)?

General Emission Estimation Formula:

$$E = A \times EF \times \left(1 - \frac{ER}{100} \right)$$

E = Emissions
A = Activity Rate
EF = Emission Factor
ER = Emission Reduction Efficiency of Controls (%)

AP-42: Your EF Resource

- Emission Factors are Available at:

  http://www.epa.gov/ttn/chief/ap42/index.html

- AP-42 Contains:

  - Emission Factors

  - Basic Process Information

  - Supplements

- EPAs WebFIRE allows for the Search of AP-42 EFs

  http://cfpub.epa.gov/webfire/index.cfm?action=fire.SearchEmissionFactors

Table 3.3-1. EMISSION FACTORS FOR UNCONTROLLED GASOLINE AND DIESEL INDUSTRIAL ENGINES[a]

Pollutant	Gasoline Fuel (SCC 2-02-003-01, 2-03-003-01)		Diesel Fuel (SCC 2-02-001-02, 2-03-001-01)		EMISSION FACTOR RATING
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	
NO_x	0.011	1.63	0.031	4.41	D
CO	6.96 E-03[d]	0.99[d]	6.68 E-03	0.95	D
SO_x	5.91 E-04	0.084	2.05 E-03	0.29	D
PM-10[b]	7.21 E-04	0.10	2.20 E-03	0.31	D
CO_2[c]	1.08	154	1.15	164	B
Aldehydes	4.85 E-04	0.07	4.63 E-04	0.07	D
TOC					
Exhaust	0.015	2.10	2.47 E-03	0.35	D
Evaporative	6.61 E-04	0.09	0.00	0.00	E
Crankcase	4.85 E-03	0.69	4.41 E-05	0.01	E
Refueling	1.08 E-03	0.15	0.00	0.00	E

[a] References 2,5-6,9-14. When necessary, an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr was used to convert from lb/MMBtu to lb/hp-hr. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code. TOC = total organic compounds.

[b] PM-10 = particulate matter less than or equal to 10 μm aerodynamic diameter. All particulate is assumed to be $\leq$ 1 μm in size.

[c] Assumes 99% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 86 weight % carbon in gasoline, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and gasoline heating value of 20,300 Btu/lb.

[d] Instead of 0.439 lb/hp-hr (power output) and 62.7 lb/mmBtu (fuel input), the correct emissions factors values are 6.96 E-03 lb/hp-hr (power output) and 0.99 lb/mmBtu (fuel input), respectively. This is an editorial correction. March 24, 2009

Other EF Resources

☐ Equipment Manufacturer Data

$$A \times EF \times \left(1 - \frac{ER}{100}\right)$$

☐ Performance Test Results

$$EF_{HOURLY\ RATE} \times T_h \times \left(1 - \frac{ER}{100}\right)$$

$$T_h = Hours\ of\ Operation$$

☐ Continuous Emission Monitoring System Data

EF Hierarchy

- A.A.C. R18-2-327(C) sets the following hierarchy for emission estimations:
  - CEMS data
  - Performance Test data
  - AP-42
  - Material Balance
  - Director Approved Alternate Method

EI Reporting Pre-Planning

Emission Inventory Report Planning Process

Permit

Operations

Processes

Emission Factors

Activity Data

Equipment Information

Document Calculations

ADEQ EI Forms

QA/QC

Input Into SLEIS

The Importance of EI Reporting

- Air Quality Programs are Only as Effective as the EIs They are Based
- Industry Can Be Environmental Stewards
- Industry Can Minimize the Economic Impact of Regulation

- An EI can form the Basis for Permit Revisions
- Some Fees are Based on Annual Emission Output
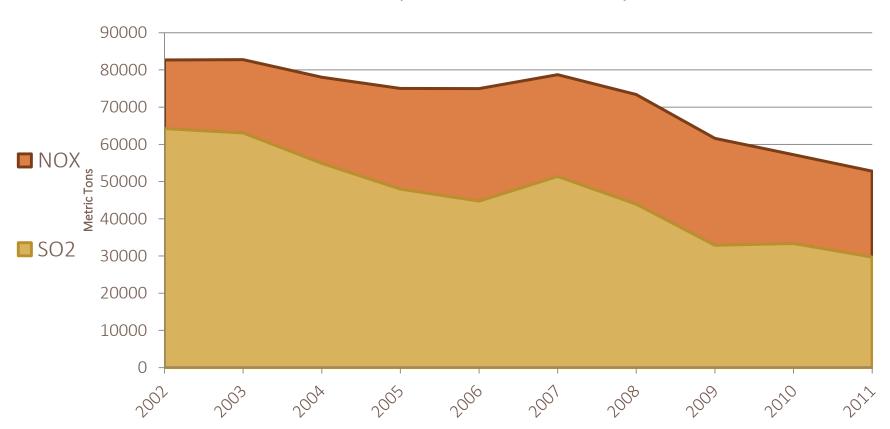- EI Reporting Is Documentation for Permit Requirements

What ADEQ Does with Emission Inventories?

- Submissions to the EPA Emissions Inventory System (EIS)
  - National Emission Inventory (NEI)
- SIP Development
  - NAA
  - Maintenance
  - Control Measure Determination
- Tracking Progress or Improvements in Air Emissions

Improvements in Air Emissions

NOx & SO2 Reductions by Electric Power Industry in Arizona
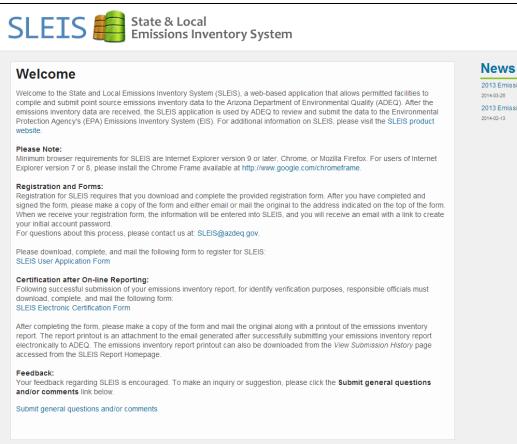
Major Point Source Reporting With SLEIS

SLEIS Home Page

https://sleis.azdeq.gov/
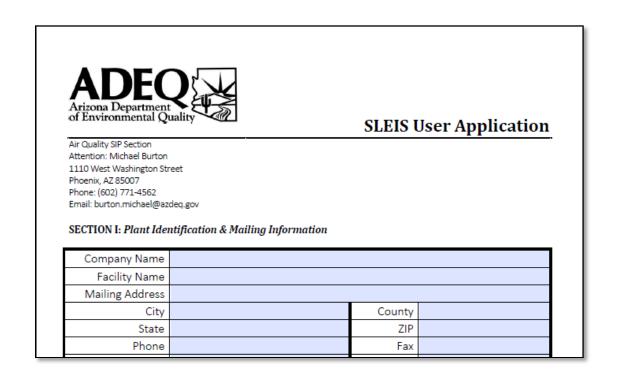
- ◻ 'News' section is periodically updated with important information

- ◻ Application and Certification forms available for download

SLEIS Application Form

□ The SLEIS User Application form is used to:

1. Create new facilities in SLEIS

2. Add users to existing facilities
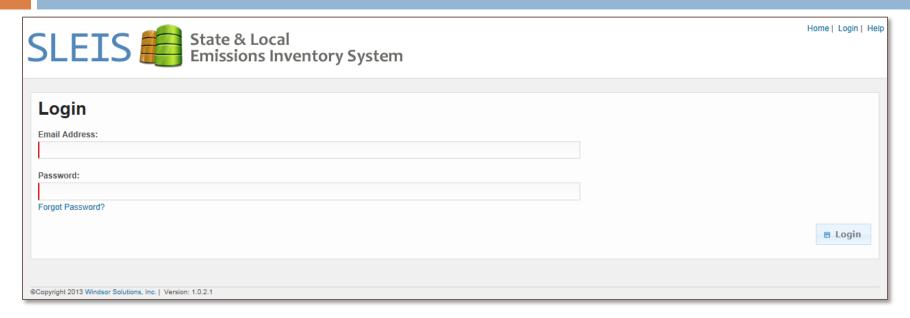
SLEIS User Accounts

- Two main roles:
  - **Editor** – Can make changes to emission reports
  - **Viewer** – Can only view emission reports

- In addition, you can also be:
  - **Administrator** – Can edit other user accounts for the facilities they are assigned to
  - **Submitter** – Allowed to submit official version of emission report. Needs to be a responsible official of the facility.

SLEIS User Accounts Cont'd
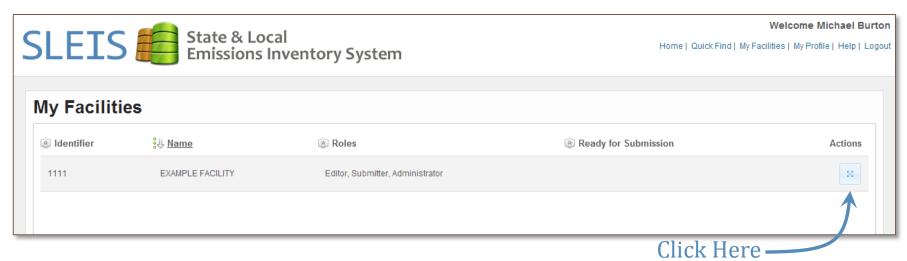
- Administrators
  - Be aware that you are responsible for maintaining the user accounts for your facilities.

  - If someone leaves your company, it is up to you to remove or inactivate their user account.
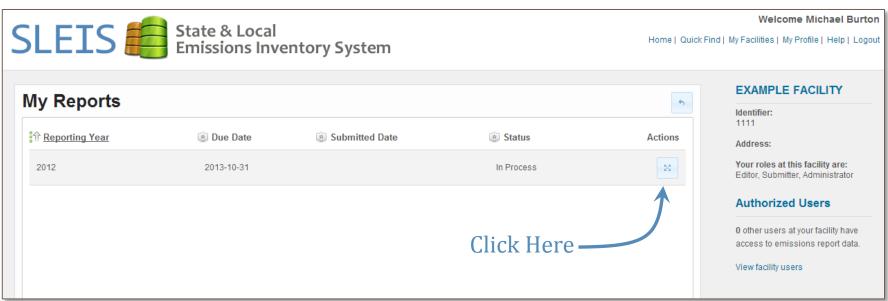
Logging In

1. Go to the secure application site at https://sleis.azdeq.gov/SLEIS/
2. Click login in the top right corner
3. Enter user email address and password
   - Only authorized facility users may access SLEIS
   - Submitters are responsible for everything submitted under your facility
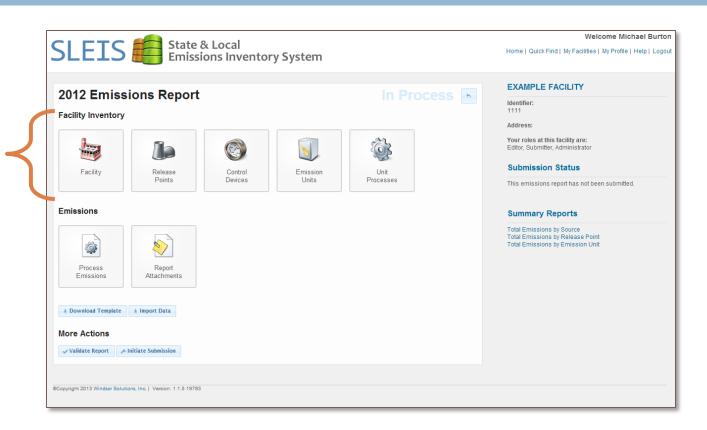
Accessing Your Facility Reporting Page
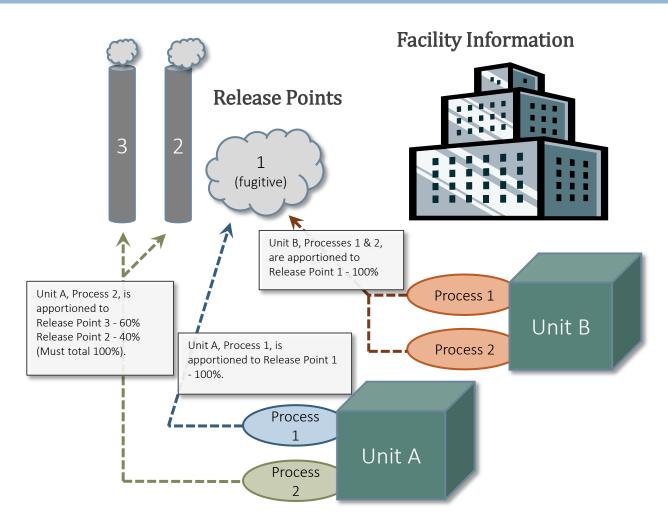
First Things First: Facility Inventory Review

- Facility Information
- Release Points
- Control Devices
- Emission Units
- Unit Processes

EPA's Emission Inventory System (EIS)

Facility Information

Release Points

3   2   1 (fugitive)

Unit B, Processes 1 & 2, are apportioned to Release Point 1 - 100%

Unit A, Process 2, is apportioned to
Release Point 3 - 60%
Release Point 2 - 40%
(Must total 100%).

Unit A, Process 1, is apportioned to Release Point 1 - 100%.
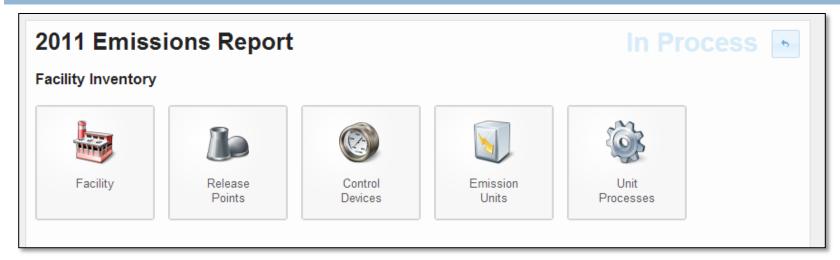
Process 1
Process 2
Unit B

Process 1
Process 2
Unit A

http://www.epa.gov/ttn/chief/eidocs/eis_training/presentation_w_speakers_notes2.zip

Facility Inventory

2011 Emissions Report *In Process*

Facility Inventory

Facility | Release Points | Control Devices | Emission Units | Unit Processes

- Facility Users can Add:
  - Release Points
  - Control Devices
  - Emissions Units
  - Unit Processes
- Once submitted, Emissions Units, Control Devices and Release Points are Added to the Master Facility Inventory list. This Master list will be used to generate next year's emissions report.
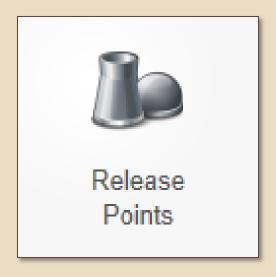
Facility

Editing Facility Information

General Facility Information
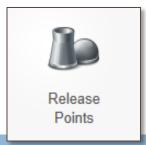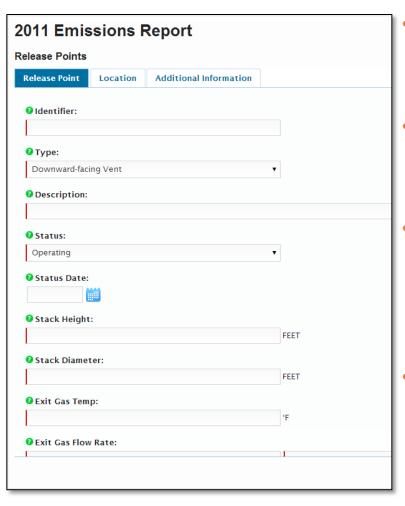
Facility

- Users Cannot Create a New Facility

- Users May Edit Certain Facility Attributes

  - Facility Status

  - Emission/Permit/Compliance Contact Info

  - Physical and Mailing Address

  - Additional Information

- Facility ID, Name, and Owner are Read Only

Adding and Verifying Release Points

Release Point

Release Points

2011 Emissions Report

Release Points

| **Release Point** | Location | Additional Information |

Identifier:

Type:
Downward-facing Vent

Description:

Status:
Operating

Status Date:

Stack Height:
FEET

Stack Diameter:
FEET

Exit Gas Temp:
'F

Exit Gas Flow Rate:
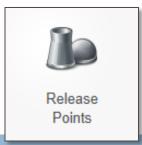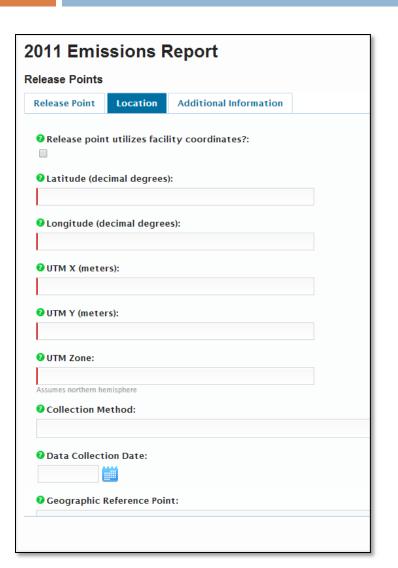
- Assign a Unique Release Point Identifier

- Choose from Vertical, Horizontal, Fugitive or Vent

- Enter Description to Match Equipment or Process It Serves

- Enter Release Point Physical Characteristics

Location

Release Points

2011 Emissions Report

Release Points

Release Point	**Location**	Additional Information

❓ **Release point utilizes facility coordinates?:**
☐

❓ **Latitude (decimal degrees):**

❓ **Longitude (decimal degrees):**

❓ **UTM X (meters):**

❓ **UTM Y (meters):**

❓ **UTM Zone:**

Assumes northern hemisphere

❓ **Collection Method:**

❓ **Data Collection Date:**

❓ **Geographic Reference Point:**
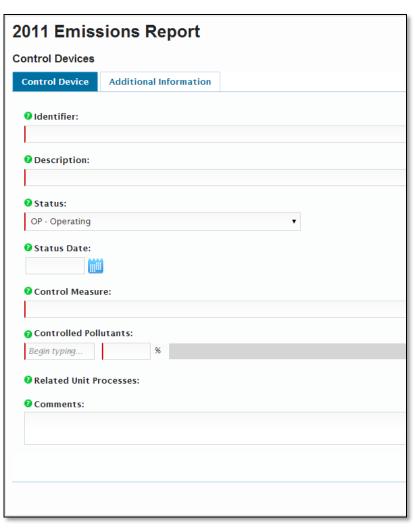
- Some Sources May Use Facility Coordinates
- Others Enter Stack or Vent Location
- Enter Lat/Long or UTM Coordinates
- The Converse Will Auto-populate

Adding and Verifying Control Devices

Control Device

Control Devices

2011 Emissions Report

Control Devices

| **Control Device** | **Additional Information** |

Identifier:

Description:

Status:
OP - Operating

Status Date:

Control Measure:

Controlled Pollutants:
Begin typing... | % |

Related Unit Processes:

Comments:
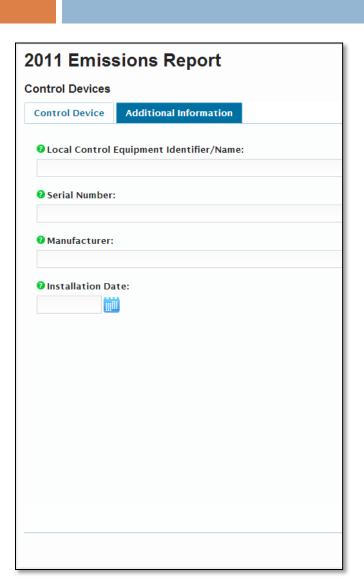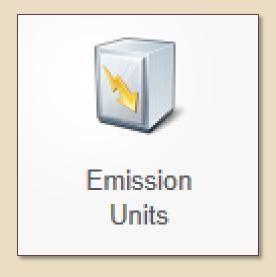
- Choose a Unique Identifier for Your Control Device
- Description Should Adequately Identify the Control Device
- SLEIS will Auto-Populate Control Measures
- Choose Your Controlled Pollutants Carefully!

Additional Information

Control Devices

2011 Emissions Report
Control Devices
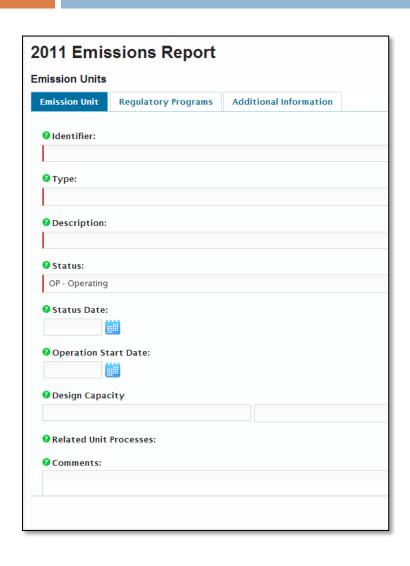
- Most Information Entered on This Page is Voluntary
- Please Enter This Info if You Have it
- Helps with the QA/QC of Emission Reporting

Adding and Verifying Emission Units

Emission Unit (EU)

Emission Units

2011 Emissions Report

Emission Units

| Emission Unit | Regulatory Programs | Additional Information |

❷ Identifier:

❷ Type:

❷ Description:

❷ Status:

OP - Operating

❷ Status Date:

❷ Operation Start Date:

❷ Design Capacity

❷ Related Unit Processes:

❷ Comments:

- Identifier Designate Emission Creating Units

- Description Personalizes EUs of Facility

- Design Capacity Required for Certain EU Types

EPA Definition - Emissions Unit
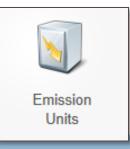
Emission Units

- "Emissions Units include all individual pieces of equipment that emit air pollutants at a stationary source. EPA regulations define an emissions unit as any part of a stationary source which emits or would have the potential to emit any pollutant subject to regulation under the Clean Air Act. Examples of common emissions units include Stationary Internal Combustion Engines, Boilers or Steam Generators, Combustion Turbines, Printing Presses, Solvent Degreasers, and Paint Spray Booths."

EPA Definition - Emissions Unit

Emission
Units

☐ The Emission Units in SLEIS should match the equipment list in your permit.

Regulatory Programs and Additional Information

Emission Units
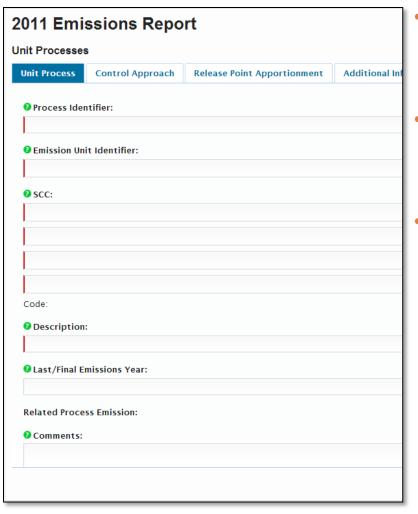
- Used Mainly to Track Regulatory Program Associated with EU
  - E.G. MACT Standards
  - E.G State and Local Regulations
- Internal Tool for Facility to Track EU
  - Tracks Title V EUs
  - Alphanumeric Value of 10 Characters or Less
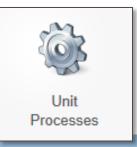
Adding and Verifying Unit Processes

Unit Process

Unit Processes

2011 Emissions Report

Unit Processes

| Unit Process | Control Approach | Release Point Apportionment | Additional Inf |

❓ Process Identifier:

❓ Emission Unit Identifier:

❓ SCC:

Code:

❓ Description:

❓ Last/Final Emissions Year:

Related Process Emission:

❓ Comments:
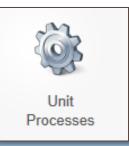
- Links Release Points, Control Devices, Emission Units

- Choose Identifier of EU that Matches Process

- Choose Appropriate Source Classification Code (SCC) and Description

Unit Process

Unit Processes

- NOTE: It is important to know your emission factors when creating your processes.

- You will only be able to enter one type of throughput for each process.

Unit Process
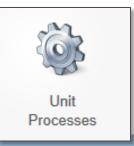
Unit Processes

☐ In general, a separate Unit Process is needed for each different Source Classification Code (SCC) associated with a particular emission unit.

EXAMPLE #1: Gasoline Storage Tanks

SCC 40400201 – Breathing Loss (RVP 13, Fixed Roof)

SCC 40400204 – Working Loss (RVP 13, Fixed Roof)

EPA's TANKS program gives emission totals for both breathing loss and working loss.

Unit Process

EXAMPLE #2: Electric Generation

> SCC 10100601 – Natural Gas
>
> SCC 10100501 – Distillate Oil

In this example, if both natural gas and distillate oil are used in the same generation unit, a separate unit process would need to be created for each of these processes. You would *not* create an emission unit for each.

Unit Process
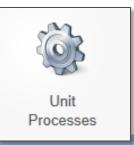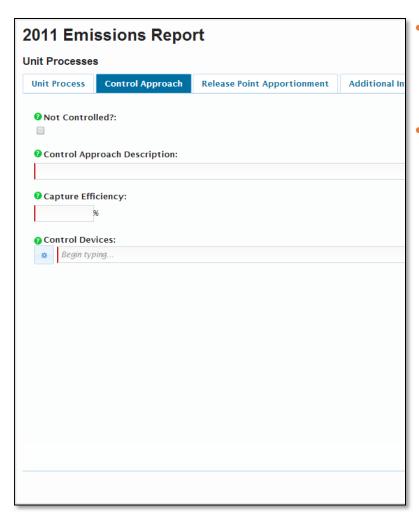
A list of SCC's can be found in EPA's Appendix 6 – Code Tables:

http://www.epa.gov/ttn/chief/eiinformation.html

Click on 'EIS Code Tables (including SCCs)'

Control Approach

Unit Processes

2011 Emissions Report

Unit Processes

| Unit Process | Control Approach | Release Point Apportionment | Additional In |

Not Controlled?:
☐

Control Approach Description:

Capture Efficiency:
[   ] %
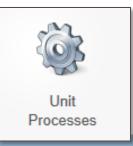
Control Devices:
⚙ *Begin typing…*

- If Uncontrolled, Check Box and Skip

- If Controlled
  - Add Description
  - Add Capture Efficiency
  - Designate Applicable Control Devices
  - Inherent vs. add-on

Determining What is Billable…The Annual Fee Rule

Unit Processes

- Class I Sources Pay An Annual Emission-Based Fee

- All Sources Pay Permit Processing/Annual Fees

- Fee Rule Summary:

  http://www.azdeq.gov/environ/air/permits/fees.html

- Fee Rule A.A.C. R18-2-326:

  http://www.azsos.gov/public_services/Title_18/18-02.htm
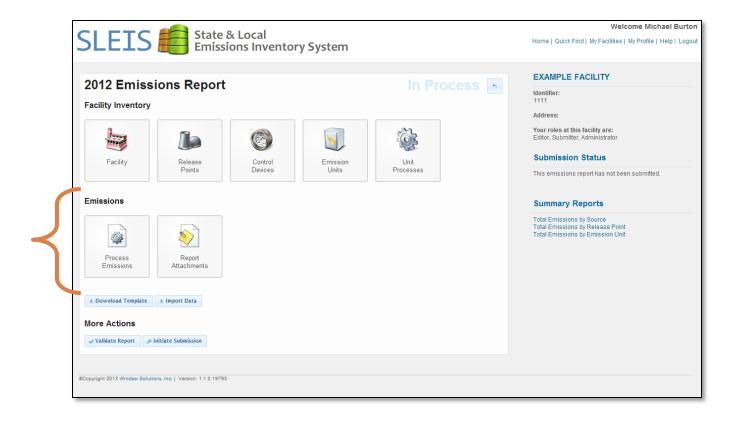
Release Point Appointment & Additional Information

Unit Processes
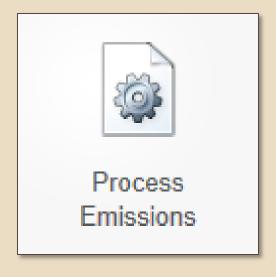
- Release Point Appointment
  - Allows for Designation of Emissions/Release Point
  - Can Designate one or Multiple Release Points
  - Must be Entered Prior to Appointment
- Additional Information: Billable Emissions
  - Are Emissions From This Process Billable?
  - If Non-Billable…Why? You Need To Include Justification In Comment Box.

Emissions Review
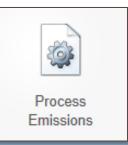
- Process Emissions

- Report Attachments
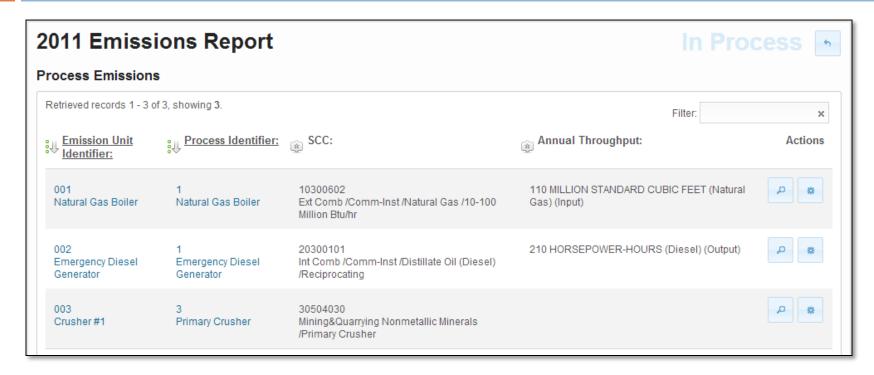
The Nitty Gritty: Reporting Process Emissions

Choose your Process

2011 Emissions Report   In Process

Process Emissions

Retrieved records 1 - 3 of 3, showing 3.   Filter: [   ] ✕

Emission Unit Identifier:	Process Identifier:	SCC:	Annual Throughput:	Actions
001 Natural Gas Boiler	1 Natural Gas Boiler	10300602 Ext Comb /Comm-Inst /Natural Gas /10-100 Million Btu/hr	110 MILLION STANDARD CUBIC FEET (Natural Gas) (Input)	🔍 ⚙
002 Emergency Diesel Generator	1 Emergency Diesel Generator	20300101 Int Comb /Comm-Inst /Distillate Oil (Diesel) /Reciprocating	210 HORSEPOWER-HOURS (Diesel) (Output)	🔍 ⚙
003 Crusher #1	3 Primary Crusher	30504030 Mining&Quarrying Nonmetallic Minerals /Primary Crusher		🔍 ⚙

- Emissions Must be Calculated for Each Process

- Users May Import and Export Data for All Process Emissions
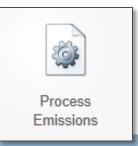
Process

Process Emissions
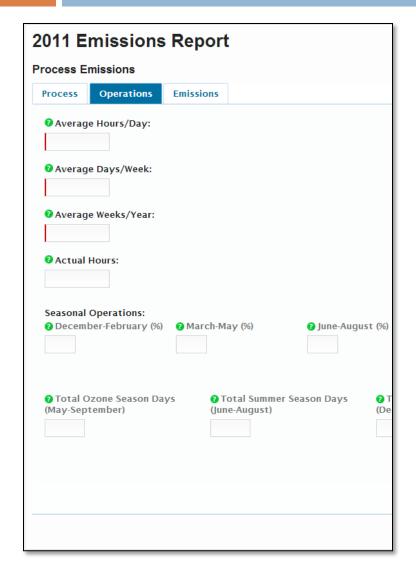
- Determine if Process Must be Reported
- Enter Throughput Information in Accordance to SCC
- Supplemental Calculation Parameters Necessary for Combustion Equipment
- Previous Years Information will Populate Some Fields

Operations

Process Emissions

2011 Emissions Report

Process Emissions

Process	**Operations**	Emissions

❓ Average Hours/Day:

❓ Average Days/Week:

❓ Average Weeks/Year:

❓ Actual Hours:

Seasonal Operations:

❓ December-February (%) ❓ March-May (%) ❓ June-August (%)

❓ Total Ozone Season Days (May-September) ❓ Total Summer Season Days (June-August) ❓ T (De
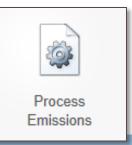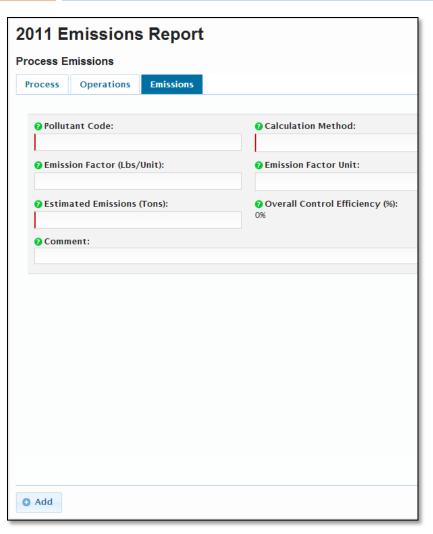
- Average Hours/Days/Weeks of Operation Required
- Actual Hours of Operation Calculates Automatically
- Please Enter Seasonal Operations

Emissions

Process Emissions

2011 Emissions Report

Process Emissions

| Process | Operations | **Emissions** |

Pollutant Code:

Calculation Method:

Emission Factor (Lbs/Unit):

Emission Factor Unit:

Estimated Emissions (Tons):

Overall Control Efficiency (%):
0%

Comment:

⊕ Add
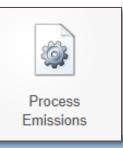
- Users Can Calculate Multiple Emissions Per Process

- Be Sure Pollutant Code Matches That of Control Measure

- All Data in Process Emission Can Be Imported

- Saving will Run Error Report/Estimated Emissions

Emissions

Process Emissions

- If you report PM25-FIL you *must* also report PM10-FIL. Same for PM25-PRI.

- For a single process, PM25 emissions should *not* exceed PM10 emissions.

- To ensure accurate totals please report PM10/25-PRI for all processes that have PM emissions. This will reduce need for EPA to augment our emissions.

SLEIS CSV Templates

- Some Sources may Prefer to Import Data Into SLEIS

- You May Download Formatted CSV Templates for Data Entry

- These CSV Templates can Be Uploaded Directly Into SLEIS

CVS FILE UPLOAD

- Begin by downloading the CVS file templates

- A ZIP file will be downloaded

CVS FILE UPLOAD
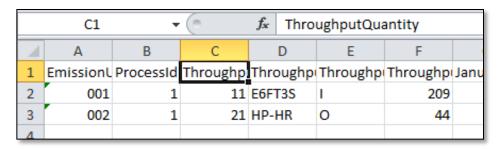
- The ZIP file contains three CSV files
  - Processes.csv
  - ProcessEmissions.csv
  - ReferenceDataValues.csv
- You will need to unzip these files and save them to your computer
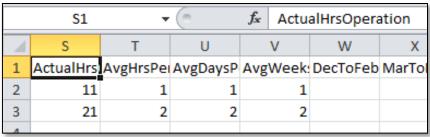
Processes.csv

- Contains throughput and activity level information for each emission process
- Required data
  - Throughput
    - Quantity (Column C)
    - Unit (Column D)
    - Type (Column E)
    - Material (Column F)
  - Activity Level
    - Actual hours of operation (Column S)
    - Average hours/day (Column T)
    - Average days/week (Column U)
    - Average weeks/year (Column V)

Processes.csv

□ Required data

□ Throughput
- ■ Quantity (Column C)
- ■ Unit (Column D)
- ■ Type (Column E)
- ■ Material (Column F)
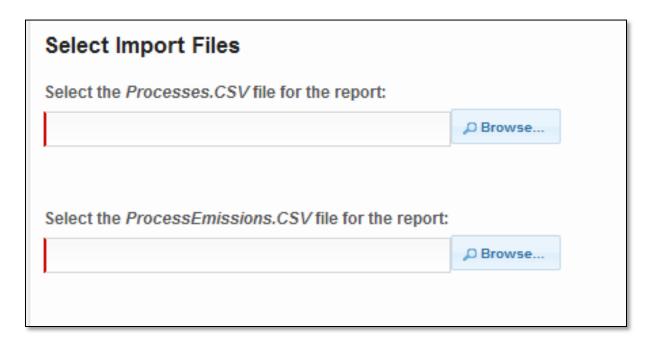
□ Activity Level
- ■ Actual hours of operation (Column S)
- ■ Average hours/day (Column T)
- ■ Average days/week (Column U)
- ■ Average weeks/year (Column V)

ProcessEmissions.csv

- Contains pollutant name, emission factor, and pollutant quantity
- Required data
  - All fields are required
    - Emission totals will auto-calculate based on throughput and emission factors
    - If using CEMS or other source for emission totals, you will need to enter the actual amount of pollutant
  - Unless you are changing or adding pollutant or emission factor data, none of this information needs to be edited

Importing Data

☐ Once you have updated the CSV files, upload them to SLEIS by clicking the 'Import Data' button

  ▫ You will be prompted to select both the Processes.csv and ProcessEmissions.csv files.

Select Import Files

Select the *Processes.CSV* file for the report:

	🔍 Browse…

Select the *ProcessEmissions.CSV* file for the report:

	🔍 Browse…

Importing Data

□ If the upload was successful, a blue status bar will appear.

Successfully imported 2 process records and 10 process emission records.

□ If the upload was unsuccessful, you will see a list of errors.

Import File Validation

showing 2.

Error	Context
ProcessId or EmissionUnitId is invalid.	Processes Line 2
ProcessId or EmissionUnitId is invalid.	Processes Line 3

Importing Data - Errors
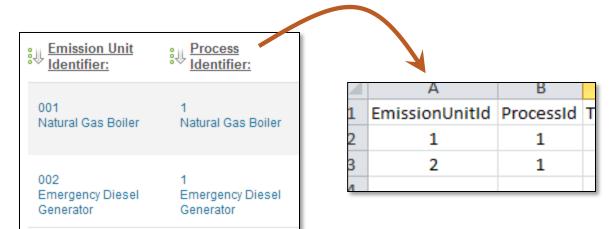
☐ The 'Error' column will tell you the row contains the error.

☐ The 'Context' column will tell you the file (Processes or ProcessEmissions) and line #

⬇ Error	🖼 Context
ProcessId or EmissionUnitId is invalid.	Processes Line 2
ProcessId or EmissionUnitId is invalid.	Processes Line 3

☐ In this example, there is an error in either the 'ProcessId' or 'EmissionUnitId' of lines 2 and 3 of the Processes.csv file.

Importing Data - Errors
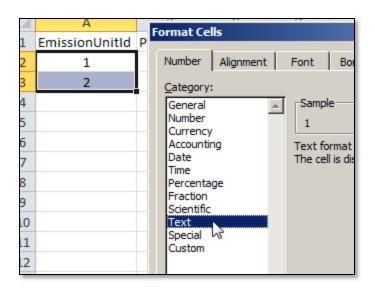
- A error will occur if your Process or Emission Unit ID #'s contain leading zeroes.
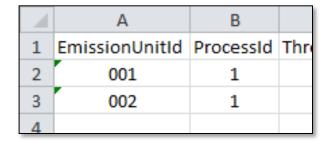
- Excel will disregard these leading zeroes and convert it into a number

Importing Data - Errors
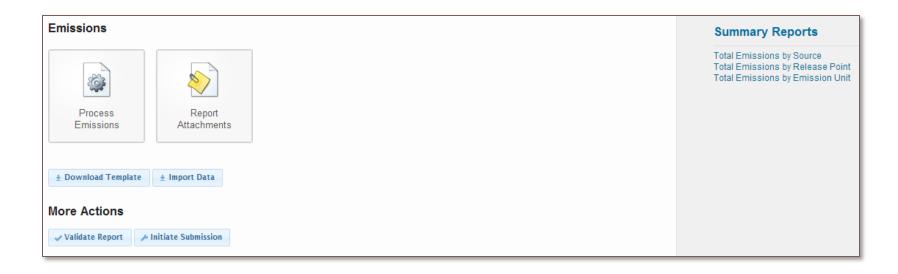
- To correct this error, you will need to force Excel to treat the ID #'s as **Text**

- Then change the ID #'s so that they exactly match what's in SLEIS
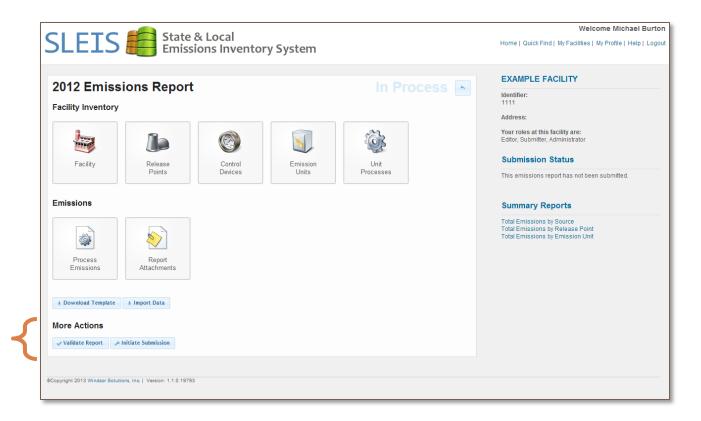
Attachments, Validate Report and Initiate Submission
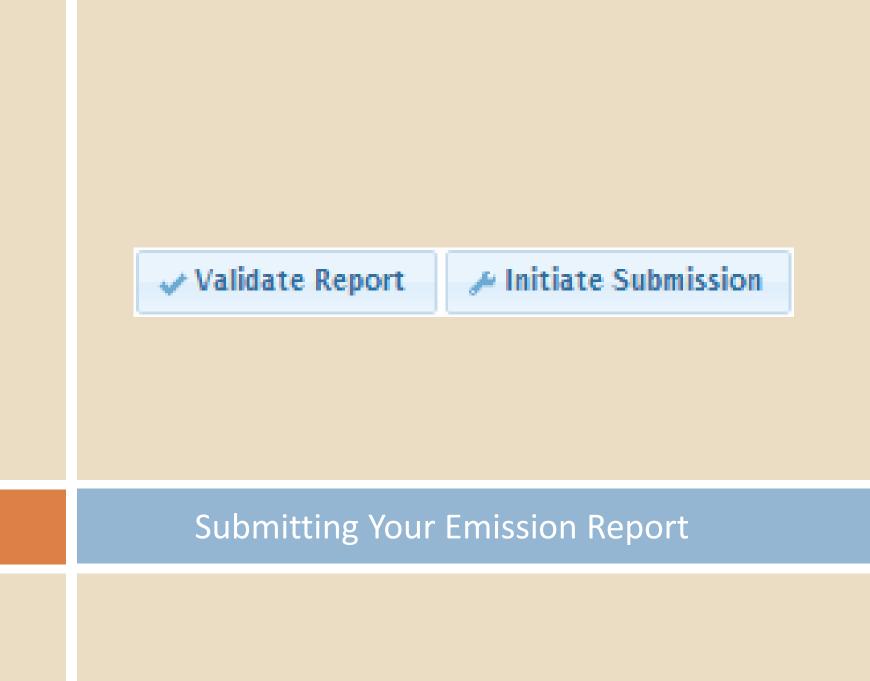
- Users May Attach Any Required Supporting Document
  - If using Material Balance or Engineering Judgment you *must* provide supporting documentation

More Actions

- Validate Report

- Initiate Submission

Submitting Your Emission Report

Validate Report

- Validate report will run automated quality assurance checks on your current emission report

- Can be run at any time…you don't need to wait until report is complete to check for errors

- Once clicked you will be taken to the Validate Report screen…

Validation Report

- If there are errors:

2011 Emissions Report   In Process

Validation Report

Errors were encountered while validating your report. Please **click here** to download the error report file.

- The error report will be downloaded as a CSV file:

	A	B	C	D
1	Error	Context		
2	Process Emission Operations Average Hours/Day is re	Emission Unit: 003, Process: 3		
3	Process Emission Operations Average Days Per Week	Emission Unit: 003, Process: 3		
4	Process Emission Throughput Material Type is requir	Emission Unit: 003, Process: 3		
5	Process Emission Annual Throughput is required	Emission Unit: 003, Process: 3		
6	Process Emission Throughout Unit of Measure is requ	Emission Unit: 003, Process: 3		
7	Process Emission Operations Average Weeks/Year is	Emission Unit: 003, Process: 3		
8	Process Emission Throughput Type is required	Emission Unit: 003, Process: 3		
9	Process Emission requires at least one Pollutant	Emission Unit: 003, Process: 3		
10				

Emission Inventory Reporting Comparison

Minor Sources & General Permit Holders Must:	Paper Form	Spreadsheet	SLEIS
Pre-Plan For EI Reporting	★	★	★
Enter Activity and Throughputs	★	★	★
Enter Facility/RO Information	★	★	Once ★
Enter Equipment Information	★	★	Once ★
Look-Up Emission Factors	★	★	Once
Own External Software		★	
Manage EI Reports & Related Records	★	★	
Manually Check for Consistency/Typos	★	★	
Perform Validation	★	★	
Physically Deliver Reports	★	★	
Verify Receipt of EI Reports	★	★	

USEFUL LINKS

- EPA's Emission Inventory Trainings:
  - http://www.epa.gov/ttn/chief/e

- ADEQ Emission Inventory Website:
  - http://azdeq.gov/environ/air/compliance/eir.html

- GovDelievery - EI Updates:
  - https://public.govdelivery.com/accounts/AZDEQ/subscriber/new

- Guidance Docs & Reporting Forms:
  - http://azdeq.gov/function/forms/appsair.html#ei

Minor Source Reporting

FINDING THE FORMS

http://www.azdeq.gov

'Publications & Forms'

FINDING THE FORMS

QUESTIONNAIRE FORMAT

Each of the questionnaire's is composed of the following 4 forms:

☐ FORM 1 – Facility General Information

☐ FORM 2 – Equipment, Process, and Stack Data

☐ FORM 3 – Specific Emission Calculations

☐ FORM 4 – Summary and Certification

FORM 1: FACILITY INFO

CTS #

| FORM 1: FACILITY GENERAL INFORMATION | YEAR 2013 |

SECTION I: *Plant Identification & Mailing Information*

Company Name: _____

Place Name: _____ Place ID # : _____

Mailing Address: _____ City: _____ State: _____

County: _____ Zip Code: _____

Phone: _____ Fax: _____

Permit # or LTF #: _____ General Permit: Yes ☐ No ☐

SECTION II: *Emissions Inventory Contact*

Name: _____ Title: _____

Phone: _____ Fax: _____

E-mail Address: _____

SECTION III: *Confidential Request*

Pursuant to Arizona Revised Statues §49-432 and §49-201, do you claim the Emissions Inventory data submittal confidential.   Yes ☐   No ☐
If yes include which portions of the inventory are confidential along with a brief explanation:

_____
_____
_____
_____
_____
_____

□ Enter general facility information

FORM 2: EQUIPMENT, STACK, & LOCATION DATA

FORM 2: EQUIPMENT, STACK, & LOCATION DATA					YEAR 2013	

Equipment Information

Equipment Type		Equipment ID	ATO #	Max. Rated Capacity	Amount Processed	Hours Operated

Stack Information

	Stack #1	Stack #2	Stack #3
Process Type/Description			
Height (feet)			
Diameter (feet)			
Velocity (feet/second)			
Exhaust Gas Temperature (F)			
Flow Rate (actual cubic feet per minute)			

Operating Location

Date		City & County of Operation	Latitude	Longitude	Address or Driving Directions
From	To				

FORM 2: EQUIPMENT, STACK, & LOCATION DATA

FORM 2: EQUIPMENT, STACK, & LOCATION DATA				YEAR 2013	
Equipment Information					
Equipment Type	Equipment ID	ATO #	Max. Rated Capacity	Amount Processed	Hours Operated

- Enter all equipment capable of producing air pollution
  - Generators
  - Boilers
  - Crushers
  - Screens
  - Etc.

FORM 2: EQUIPMENT, STACK, & LOCATION DATA

Stack Information	Stack #1	Stack #2	Stack #3
Process Type/Description			
Height (feet)			
Diameter (feet)			
Velocity (feet/second)			
Exhaust Gas Temperature (F)			
Flow Rate (actual cubic feet per minute)			

- Enter each stack, if you have any
  - For this purpose, generator exhaust pipes are not considered stacks

FORM 2: EQUIPMENT, STACK, & LOCATION DATA

Operating Location					
Date		City & County of Operation	Latitude	Longitude	Address or Driving Directions
From	To				

☐ Only enter information if your portable source has moved during the year.

FORM 3: EMISSION CALCULATIONS

- FORM 3 will be different for each specific questionnaire.

- In general, this section will ask for hours of operation, material throughputs, max. design capacity, etc.

- Most questionnaires also contain sections for boiler and generator emissions.
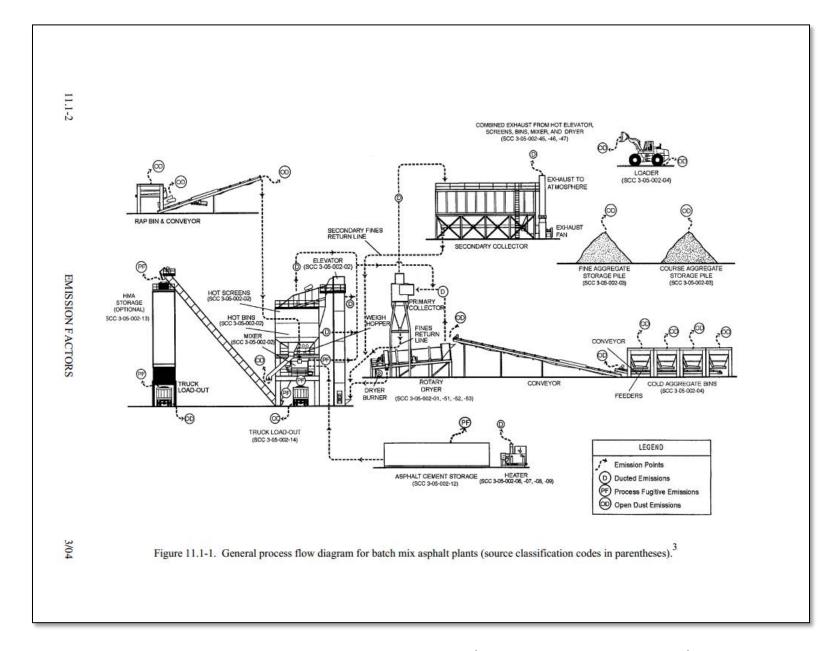
FORM 3: EMISSION CALCULATIONS

☐ FORM 3 generally specifies different pollution sources and you may need to fill in:

☐ How many of each source

☐ Throughput (through that particular source)

☐ Hours of operation

Source	Pollutant	Number of Units	Amount Processed tons/hour	Hours Operated hours/year	Emission Factor pounds/ton/unit	Emissions tons/year
Batch Drop Operations	PM10				0.00048	0.0000
	PM2.5				0.00016	0.0000
	PM				0.00067	0.0000
	PM10				0.00048	0.0000

ASPHALT PLANT

		FORM 3A. ROTARY DRUM DRYER - BATCH MIX			**YEAR 2013**		

If a Drum Mix process is employed, skip this section and complete Section B.

		Natural Gas fired			No. 2 Oil fired (Distillate Oil)		
Controls/Process	Pollutant	Amount Processed tons/year	Emission Factor pounds/ton	Emission tons/year	Amount Processed tons/year	Emission Factor pounds/ton	Emission tons/year
Venturi Scrubber	PM		0.14	0.0000		0.14	0.0000
	PM10		0.09	0.0000		0.09	0.0000
Fabric Filter	PM		0.042	0.0000		0.042	0.0000
	PM10		0.027	0.0000		0.027	0.0000
Crumb Rubber	VOC		0.188	0.0000		0.217	0.0000
Non-crumb Rubber	VOC		0.0082	0.0000		0.0082	0.0000
	SOx		0.0046	0.0000		0.088	0.0000
	CO	0.00	0.4	0.0000	0.00	0.4	0.0000
	NOx		0.025	0.0000		0.12	0.0000
	Acenaphthene		9.00E-07	0.00E+00		9.00E-07	0.00E+00

- FORM 3A is only for Batch Mix Plants

Figure 11.1-1. General process flow diagram for batch mix asphalt plants (source classification codes in parentheses).[3]

□ Batch Mix Plant Diagram (*AP-42 11.1-2)*

ASPHALT PLANT

		Natural Gas fired			**No. 2 Oil fired (Distillate Oil)**		
FORM 3B. ROTARY DRUM DRYER - DRUM MIX PROCESS					**YEAR 2013**		
Conversion Factor: 1 ton = 2000 lbs							
Controls/Process	Pollutant	Amount Processed tons/year	Emission Factor pounds/ton	Emission tons/year	Amount Processed tons/year	Emission Factor pounds/ton	Emission tons/year
Venturi Scrubber	PM		0.045	0.0000		0.045	0.0000
	PM10		0.031	0.0000		0.031	0.0000
Fabric Filter	PM		0.033	0.0000		0.033	0.0000
	PM10		0.023	0.0000		0.023	0.0000
Crumb Rubber	VOC		0.221	0.0000		0.24	0.0000
Non-crumb Rubber	VOC		0.032	0.0000		0.032	0.0000
	SOx		0.0034	0.0000		0.058	0.0000

□ FORM 3B is only for Drum Mix Plants

Figure 11.1-3. General process flow diagram for counter-flow drum mix asphalt plants (source classification codes in parentheses).[3]

□ Drum Mix Plant Diagram (*AP-42 11.1-2)*

ASPHALT PLANT

- FORM 3C – enter amount of fuel consumed in your cement storage tank heaters.

- FORM 3D – enter maximum capacity (HP) and hours of operation for your emergency generators. Only use the column that corresponds to the fuel type.

ASPHALT PLANT

Input the number of emission points and the actual tons of material processed through each point in the appropriate column & row.

SOURCE	Pollutants	No. of Emission Points quantity	Amount Processed tons/year	Emission Factor lb/ton of asphalt	Emissions tons/yr
Continuous and Batch Drop Operations	PM			0.00064	0.00E+00
	PM10			0.00033	0.00E+00
hopper, elevated bins & weigh hoppers	PM			0.00064	0.00E+00
	PM10			0.00033	0.00E+00
Cement transfer to silos	PM			0.00001	0.00E+00
	PM10			0.0000034	0.00E+00
Cement transfer to weigh hoppers	PM			0.00015	0.00E+00
	PM10			0.000073	0.00E+00

SOURCE	Pollutants	No. of Transfer/Screening Point quantity	Amount Processed tons/year	Emission Factor lb/ton of asphalt /point	Emissions tons/year
Conveyor transfer points	PM			0.0001	0.00E+00
	PM10			0.000042	0.00E+00
Screening operations	PM			0.002	0.00E+00
	PM10			0.0007	0.00E+00

- □ FORM 3E – enter the number of emission points and actual tons of material processed through each point for each of the applicable sources.

BOILERS

	FORM 3A: EMISSIONS CALCULATIONS FOR BOILERS					YEAR 2013		
	Conversion Factors - MM = 1,000,000 M = 1,000 1 Therm = 100,000 BTUs. 1 MMBTU = 1,000,000 BTUs. 1HP = 2546.15 BTUs							
	FUEL - NATURAL GAS				FUEL - DIESEL			
	Boiler #1		Boiler #2		Boiler #1		Boiler #2	
	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year
Pollutants	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year
PM	0.0075	0.0000	0.0075	0.0000	0.0240	0.0000	0.0240	0.0000
PM10	0.0075	0.0000	0.0075	0.0000	1.56E-06	0.00E+00	1.56E-06	0.00E+00
NOx	0.0980	0.0000	0.0980	0.0000	0.1460	0.0000	0.1460	0.0000
SOx	0.0006	0.0000	0.0006	0.0000	0.8290	0.0000	0.8290	0.0000
VOC	0.0054	0.0000	0.0054	0.0000	0.0025	0.0000	0.0025	0.0000
CO	0.0824	0.0000	0.0824	0.0000	0.0365	0.0000	0.0365	0.0000
Acenaphthene	1.76E-09	0.00E+00	1.76E-09	0.00E+00	1.54E-07	0.00E+00	1.54E-07	0.00E+00
Acenaphthylene	1.76E-09	0.00E+00	1.76E-09	0.00E+00	1.85E-09	0.00E+00	1.85E-09	0.00E+00
Anthracene	2.35E-09	0.00E+00	2.35E-09	0.00E+00	8.91E-09	0.00E+00	8.91E-09	0.00E+00

- FORM 3A – list the max. capacity (MMBtu/hr) and hours of operation for each boiler under the appropriate fuel type.

- FORM 3B – info for generators, if applicable

BOILERS

- FORM 3A – list the max. capacity (MMBtu/hr) and hours of operation for each boiler under the appropriate fuel type.

- FORM 3B – info for generators, if applicable

- Most of the specific questionnaires also contain sections for boiler emissions. If so, you do not need to also complete a separate Boiler questionnaire.

CONCRETE BATCH PLANTS

Transfer Point Emissions	Conversion Factors - 1 cubic yard of concrete = 2 tons of concrete 2000 lbs = 1 ton					
Source	Pollutant	Number of Units	Throughput Rate tons/hour	Hours Operated hours/year	Emission Factor pounds/ton	Emissions tons/year
Continuous & batch drop operations onto aggregate storage piles	PM10				0.0016	0.0000
	PM				0.0032	0.0000
Continuous & batch drop operations onto sand storage piles	PM10				0.0004	0.0000
	PM				0.0008	0.0000
Aggregate transfer to feed hopper	PM10				0.0016	0.0000
	PM				0.0032	0.0000
Sand transfer to feed hopper	PM10				0.0004	0.0000
	PM				0.0008	0.0000
Aggregate transfer to elevated bins	PM10				0.0016	0.0000
	PM				0.0032	0.0000
Sand transfer to elevated bins	PM10				0.0004	0.0000
	PM				0.0008	0.0000
Aggregate transfer to weigh hoppers	PM10				0.0019	0.0000
	PM				0.0039	0.0000

☐ FORM 3A – for each source, list the number of units, throughput through that source, and hours of operation.

COTTON GINS

Source	Quantity	Amount Processed bales/year	Pollutant	Emission Factor pounds/bale	Emissions tons/year
Unloading fan			PM10	0.12	0.0000
			PM	0.29	0.0000
No. 1 dryer & cleaner			PM10	0.12	0.0000
			PM	0.36	0.0000
No. 2 dryer & cleaner			PM10	0.093	0.0000
			PM	0.24	0.0000
No. 3 dryer & cleaner			PM10	0.033	0.0000
			PM	0.095	0.0000
Overflow fan			PM10	0.026	0.0000
			PM	0.071	0.0000
Lint cleaner with high-efficiency cyclones			PM10	0.24	0.0000
			PM	0.58	0.0000

□ FORM 3A – for each source, list the number of units and the throughput (# of bales).

CRUSHING AND SCREENING

Source	Pollutant	Number of Units	Amount Processed tons/hour	Hours Operated hours/year	Emission Factor pounds/ton/unit	Emissions tons/year
Batch Drop Operations	PM10				0.00048	0.0000
	PM2.5				0.00016	0.0000
	PM				0.00067	0.0000
Loading feed hopper	PM10				0.00048	0.0000
	PM2.5				0.00016	0.0000
	PM				0.00067	0.0000
Pneumatic loading of lime silo	PM10				0.0049	0.0000
	PM2.5				0.0049	0.0000
	PM				0.0089	0.0000

☐ FORM 3A – for each source, list the number of units, the throughput (tons/hr), and hours of operation.

CRUSHING AND SCREENING

Conversion Number - 1 foot = 0.0001894 mile				
Source	Pollutants	Vehicle Miles Traveled miles/year	Emission Factor pounds/VMT	Emissions tons/year
Fugitive Emissions - Haul Roads	PM10		0.1671	0.0000
	PM2.5		0.0256	0.0000
	PM		0.6555	0.0000

Source	Pollutants	No. of Piles	Hours Stored hrs/year	Emission Factor pounds/hour/piles	Emissions tons/year
Fugitive Emissions - Storage Piles	PM10			0.00004828	0.0E+00
	PM2.5			0.0000142	0.0E+00
	PM			0.00004828	0.0E+00

Source	Pollutant	Amount Processed tons/year	Emission Factor pounds/ton/unit	Emissions tons/year
Truck Unloading - Fragmented Stone	PM10		0.000016	0.00E+00
Truck Unloading - Conveyor, Crushed Stone	PM10		0.0001	0.00E+00
Wet Drilling - Unfragmented Stone	PM10		0.00008	0.00E+00

☐ FORM 3B – Fugitive Emissions

DRY CLEANING

Table 1: Equipment & Process Data

Equipment (check all equipment on-site)	☐ Only Dry-toDry ☐ Only Transfer ☐ Combination ☐ Boiler
Source Category (check one)	☐ Small Area Source ☐ Large Area Source
Gallons of Percholoroethylene purchased in 2013	
ATO#	
Emission Control Device (check one)	☐ Refrigerated Condenser ☐ Carbon Absorber ☐ None

☐ FORM 2, Table 1 – Enter equipment and control devise type along with source category.

DRY CLEANING

	Month	Perchloroethylene Purchased (Gallons)	Perchloroethylene Consumed (Gallons)
Perchlorethylene purchase & comsumed for the year 2013	January		
	February		
	March		
	April		
	May		
	June		
	July		
	August		
	September		
	October		
	November		
	December		
	Totals	0	0

Table 2: Yearly Perchlorethylene Purchase & Comsumed

☐ FORM 2, Table 2 – Enter perchloroethylene purchased and consumed each month.

DRY CLEANING

Dry Cleaning Process			
Pollutants	Total PERC. Consumed gallons/year	Emission Factor pounds/gallon	Emissions tons/year
PERC		13.5	0

Conversion Factors - MM = 1,000,000   M = 1,000   1 Therm = 100,000 BTUs.   1 MMBTU = 1,000,000 BTUs.   1HP-hr = 2546.15 BTUs

Boiler	FUEL - NATURAL GAS		FUEL - DIESEL		FUEL - BUTANE		FUEL - PROPANE	
	Max. Rated Capacity (MMBtu-hr)	Operational Hours (hours/year)	Max. Rated Capacity (MMBtu-hr)	Operational Hours (hours/year)	Max. Rated Capacity (MMBtu-hr)	Operational Hours (hours/year)	Max. Rated Capacity (MMBtu-hr)	Operational Hours (hours/year)
Pollutants	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year
NOx	0.0980	0.0000	0.1460	0.0000	0.2059	0.0000	0.2077	0.0000
CO	0.0824	0.0000	0.0365	0.0000	0.0353	0.0000	0.0350	0.0000
PM10	0.0075	0.0000	1.56E-06	0.0000	0.0059	0.0000	0.0066	0.0000
PM	0.0075	0.0000	0.0240	0.0000	0.0059	0.0000	0.0066	0.0000
SOx	0.0006	0.0000	0.8290	0.0000	-	-	-	-
VOCs	0.0054	0.0000	0.0025	0.0000	0.0041	0.0000	0.0033	0.0000
HAPs	1.33E-02	0.00E+00	1.51E-02	0.00E+00	0.0020	0.00E+00	0.0022	0.00E+00

- FORM 3 – Enter perchloroethylene consumed for the year (total should match FORM 2, Table 2)
- Enter boiler info (if applicable)

SOIL VAPOR EXTRACTION

FORM 3: EMISSIONS CALCULATIONS					YEAR 2013		
Emissions from Contaminated Soil							
Sampling Results Date	Hours of Operation	Pollutant	EPA 8015 & 8021 Effluent ppm by vol	Molecular Weight	Maximum Concentration ug/L	Flow Rate ft^3/min	Annual Emissions tons/year
		VOC		100	0		0.00E+00
		Benzene		78.11	0		0.00E+00
		Toluene		92.16	0		0.00E+00
		Ethylbenzene		106.16	0		0.00E+00
		Xylene		106.16	0		0.00E+00
		VOC		100	0		0.00E+00
		Benzene		78.11	0		0.00E+00
		Toluene		92.16	0		0.00E+00
		Ethylbenzene		106.16	0		0.00E+00
		Xylene		106.16	0		0.00E+00

☐ FORM 3 – Enter sampling results, date of sample, hours of operation and flow rate.

MINOR SORUCE

- The 'Minor Source' questionnaire should only be used if you cannot use the specific questionnaires.

- There are no emission factors or emission sources in this form...you will need to enter everything and perform calculations yourself

MINOR SORUCE

FORM 2: EQUIPMENT DATA						2013

Equipment Type	Equipment ID	Design Capacity	Units	Hours of Operation	Fuel Type	Control Device
EXAMPLE - Boiler	B-101	10	Mmbtu/hr	8760	Natural Gas	None

- FORM 2: Equipment Data
  - Enter all equipment as specified in your permit
- FORM 3: Stack & Location Data
  - Same guidance as other questionnaires

MINOR SOURCE

☐ FORM 4: Emissions Data

FORM 4: EMISSIONS DATA											2013
EQUIPMENT TYPE	EQUIPMENT ID	ANNUAL PROCESS RATE	UNITS	HOURS OF OPERATION	POLLUTANT	EMISSION FACTOR	UNITS	EMISSION FACTOR REFERENCE	POLLUTANT CONTROL DEVICE	CONTROL EFFICIENCY (%)	ACTUAL EMISSIONS (TONS/YEAR)
EXAMPLE - Boiler	B-101	10	MMBtu/hr	8760	NOx	0.098	lbs/MMBtu	AP-42	None	0	4.2924
EXAMPLE - Boiler	B-101	10	MMBtu/hr	8760	PM10	0.0075	lbs/MMBtu	AP-42	None	0	0.3285

Q&A

Thank You!

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